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PCT/IL2005/000249
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APPLICATION NUMBER: *10/791,782*
FILING DATE: *March 04, 2004*

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UTILITY PATENT APPLICATION TRANSMITTAL

(Only for new nonprovisional applications under 37 C.F.R. § 1.53(b))

Attorney Docket No.	P-6507-US
First Inventor or Application Identifier	TOUITOU, Elka
Title	METHOD AND COMPOSITION FOR BURNED SKIN
Express Mail Label No.	

APPLICATION ELEMENTS

See MPEP chapter 600 concerning patent application contents

ADDRESS TO: Commissioner for Patents
P. O. Box 1450
Alexandria, VA 22313-1450

19270 U.S.PTO 10/791782 030404

1. ☒ * Fee Transmittal Form *(e.g., PTO/SB/17)*
(Submit an original and a duplicate for fee processing)
2. ☐ Applicant claims small entity status. See 37 CFR 1.27.
3. ☒ Specification [*Total Pages* 34]
(preferred arrangement set forth below)
- Descriptive title of the Invention
- Cross References to Related Applications
- Statement Regarding Fed sponsored R & D
- Reference to sequence listing, a table, or a computer program listing appendix
- Background of the Invention
- Brief Summary of the Invention
- Brief Description of the Drawings *(if filed)*
- Detailed Description
- Claim(s)
- Abstract of the Disclosure
4. ☒ Drawing(s) *(35 U.S.C. 113)* [*Total Sheets* 4]
5. Oath or Declaration [*Total Pages* 2]
a. ☒ Newly executed (original or copy)
b. ☐ Copy from a prior application (37 C.F.R. § 1.63(d)) *(for continuation/divisional with Box 16 completed)*
i. ☐ DELETION OF INVENTOR(S)
Signed statement attached deleting inventor(s) named in the prior application, see 37 CFR 1.63(d)(2) and 1.33(b).
6. ☐ Application Data Sheet. See 37 CFR 1.76
7. ☐ CD-ROM or CD-R in duplicate, large table or Computer Program *(Appendix)*
8. Nucleotide and/or Amino Acid Sequence Submission *(if applicable, all necessary)*
a. ☐ Computer Readable Form (CRF)
b. ☐ Specification Sequence Listing on:
i. ☐ CD-ROM or CD-R (2 copies); or
ii. ☐ paper
c. ☐ Statements verifying identity of above copies

ACCOMPANYING APPLICATION PARTS

9. ☒ Assignment Papers (cover sheet & document(s))
10. ☐ 37 C.F.R. §3,73(b) Statement *(when there is an assignee)* ☐ Power of Attorney
11. ☐ English Translation Document *(if applicable)*
12. ☒ Information Disclosure Statement(IDS)/PTO-1449 ☒ Copies of IDS Citations
13. ☐ Preliminary Amendment
14. ☐ Return Receipt Postcard (MPEP 5303) *(Should be specifically itemized)*
15. ☐ Certified Copy of Priority Document(s) *(if foreign priority is claimed)*
16. ☒ Other: Postcard

17. If a CONTINUING APPLICATION, *check appropriate box, and supply the requisite information below and in a preliminary amendment, or in an Application Data Sheet under 37 CFR 1.76:*

☐ Continuation ☐ Divisional ☐ Continuation-in-part (CIP) of prior application No.: _____/_____

Prior application information: *Examiner* *Group/Art Unit:*

For CONTINUATION or DIVISIONAL APPS only: The entire disclosure of the prior application, from which an oath or declaration is supplied under Box 4b, is considered a part of the disclosure of the accompanying continuation or divisional application and is hereby incorporated by reference. The incorporation can only be relied upon when a portion has been inadvertently omitted from the submitted application parts.

18. CORRESPONDENCE ADDRESS

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Signature		*Date*	4 March 2004

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FEE TRANSMITTAL for FY 2004

Effective 10/01/2003. Patent fees are subject to annual revision.

☐ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT ($)959.00

Complete if Known	
Application Number	
Filing Date	
First Named Inventor	TOUITOU, Elka
Examiner Name	
Group / Art Unit	
Attorney Docket No.	P-6507-US

METHOD OF PAYMENT *(check all that apply)*

☐ Check ☐ Credit card ☐ Money Order ☐ Other ☐ None

☒ Deposit Account:

Deposit Account Number: 05-0649

Deposit Account Name: Eitan, Pearl, Latzer & Cohen Zedek, LLP

The Director is authorized to: *(check all that apply)*

☒ Charge fee(s) indicated below ☐ Credit any overpayments

☒ Charge any additional fee(s) or any underpayment of fee(s)

☐ Charge fee(s) indicated below, except for the filing fee to the above-identified deposit account.

FEE CALCULATION

1. BASIC FILING FEE

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description	Fee Paid
1001	770	2001	385	Utility filing fee	385.00
1002	340	2002	170	Design filing fee	
1003	530	2003	265	Plant filing fee	
1004	770	2004	385	Reissue filing fee	
1005	160	2005	80	Provisional filing fee	

SUBTOTAL (1) ($)385.00

2. EXTRA CLAIM FEES FOR UTILITY AND REISSUE

			Extra Claims		Fee from Below		Fee Paid
Total Claims	36	-20** =	16	x	9	=	144
Independent Claims	13	-3** =	10	x	43	=	430
Multiple Dependent				x		=	

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description
1202	18	2202	9	Claims in excess of 20
1201	86	2201	43	Independent claims in excess of 3
1203	290	2203	145	Multiple dependent claim, if not paid
1204	86	2204	43	** Reissue independent claims over original patent
1205	18	2205	9	** Reissue claims in excess of 20 and over original patent

SUBTOTAL (2) ($)574.00

**or number previously paid, if greater; For Reissues, see above

FEE CALCULATION (continued)

3. ADDITIONAL FEES

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description	Fee Paid
1051	130	2051	65	Surcharge - late filing fee or oath	
1052	50	2052	25	Surcharge - late provisional filing fee or cover sheet.	
1053	130	1053	130	Non-English specification	
1812	2,520	1812	2,520	For filing a request for *ex parte* reexamination	
1804	920*	1804	920*	Requesting publication of SIR prior to Examiner action	
1805	1,840*	1805	1,840*	Requesting publication of SIR after Examiner action	
1251	110	2251	55	Extension for reply within first month	
1252	420	2252	210	Extension for reply within second month	
1253	950	2253	475	Extension for reply within third month	
1254	1,480	2254	740	Extension for reply within fourth month	
1255	2,010	2255	1,005	Extension for reply within fifth month	
1401	330	2401	165	Notice of Appeal	
1402	330	2402	165	Filing a brief in support of an appeal	
1403	290	2403	145	Request for oral hearing	
1451	1,510	1451	1,510	Petition to institute a public use proceeding	
1452	110	2452	55	Petition to revive - unavoidable	
1453	1,330	2453	665	Petition to revive - unintentional	
1501	1,330	2501	665	Utility issue fee (or reissue)	
1502	480	2502	240	Design issue fee	
1503	640	2503	320	Plant issue fee	
1460	130	1460	130	Petitions to the Commissioner	
1807	50	1807	50	Processing fee under 37 CFR 1.17(q)	
1806	180	1806	180	Submission of Information Disclosure Stmt	
8021	40	8021	40	Recording each patent assignment per property (times number of properties)	
1809	770	2809	385	Filing a submission after final rejection (37 CFR 1.129(a))	
1810	770	2810	385	For each additional invention to be examined (37 CFR 1.129(b))	
1801	770	2801	385	Request for Continued Examination (RCE)	
1802	900	1802	900	Request for expedited examination of a design application	

Other fee (specify) _____

*Reduced by Basic Filing Fee Paid SUBTOTAL (3) ($)

SUBMITTED BY					Complete *(if applicable)*
Name (Print/Type)	Mark S. Cohen	Registration No. (Attorney/Agent)	42,425	Telephone	(212) 632-3480
Signature				Date	March 4, 2004

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Method and Composition for Burned Skin

Field of the Invention

[0001] This invention relates to compositions, methods and delivery systems for application on burns and surrounding tissue wherein said composition comprise ammonium hydroxide (or ammonium bicarbonate) and /or 15-70% volatile short chain mono-alcohols

Background of the Invention

[0002] Thermal burn injury induces non-specific inflammatory reaction generating dermal vascular damage, destruction of epidermis, edema and blister formation. These responses lead to progressive ischemic damage to the skin tissue, reduced blood perfusion and tissue necrosis. Since not all the skin tissues are immediately destroyed after thermal burn, depth of burns progresses with time. Cytokines IL6, IL1, TNF alpha, other pro-inflammatory interleukins and globulins are important factors in the development of microvascular injury and wound development in burned skin and tissue. Numerous attempts to favorably alter the burn wound by pharmacologic agent are generally of moderate efficiency. Burned skin could be a result of infliction produced by heat, light, UV rays, X-rays, Laser, Infrared rays, friction, abrasion, cold, liquid nitrogen.

[0003] The use of anti-inflammatory agents and local anesthetics to alleviate inflammation and pain resulting from burns is known. Compositions containing steroidal anti-inflammatories, non-steroidal anti-inflammatories, as well as "natural" anti-inflammatories, such as extract of plants such as aloe vera, have been used.

[0004] With respect to the care of burns, the main objectives are to relieve pain, help prevent contamination, eliminate the source of heat and stop the burn progress.

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Brief Description of the Drawings:

[0005] Fig. 1 (A-D) demonstrates histological images of rat skin sections following in vivo treatment after thermal burn: (A) Control-no treatment, t=24 hours; (B) immediate application of the composition, t=3 hours; (C) non-immediate treatment (delayed for 1 hour after burn) t= 24 hours; and (D) immediate application of the composition, t=24 hours.

[0006] Fig. 2 demonstrates measurement of depth dermal microvascular destruction 24 hours after burn infliction: Animals have been treated immediately after infliction with carbopol gels containing 4% ammonium hydroxide 10% aqueous solution and 20, 30, 50 and 63% w/w ethanol and 1 hour after infliction with a gel containing 30% ethanol. The results were compared with untreated inflicted rats. The depth parameter was measured in rats sacrificed 3, 6, and 24 hours after burn infliction.

[0007] Fig. 3 shows histological parameters from skin sections 24 hours after burn infliction. The rats were treated immediate after infliction with gels containing 20, 30, 50 and 60% ethanol.

[0008] Fig. 4 shows histological parameters from skin sections, 24 hours after burn infliction. The rats were treated immediate after infliction with liquid sprays containing 20, 30, 50 and 60% ethanol.

Summary of the Invention

[0009] In one embodiment, the invention provides a composition and use thereof for treating membrane/organ/ burned, friction inflicted skin comprising ethyl or isopropyl alcohol in a concentration of 15-70%w/w.

[00010] In another embodiment, the invention provides a composition and use thereof for treating burned skin /membrane/organ comprising ammonium hydroxide.

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[00011] In another embodiment, the invention provides a delivery system and use thereof for treating burned skin /membrane/organ comprising a polymer matrix and ammonium hydroxide and ethyl or isopropyl alcohol wherein the ethyl or isopropyl alcohol is in a concentration of 20-60%W/W.

[00012] In another embodiment, the invention provides a composition comprising ethanol from 20-60% w/w, polyacrylate polymer from 0.05%-10%, ammonium hydroxide from 0.1-10%, water from 30 -89% to be applied on burned skin and surrounding area, to treat and/ or impede progression and or impede development of burns.

[00013] In another embodiment, the invention provides a Composition comprising ethanol from 25-60% w/w, polyacrylate polymer from 0.05%-10%w/w triethanolamine from 0.1-6%, water from 30-74%, to be applied on burned skin and surrounding area, to treat an or impede progression and or impede development of burns.

[00014] In another embodiment, the invention provides a composition comprising ethanol from 15-60% w/w, polyacrylate polymer from 0.05%-5%, ammonium hydroxide from 0.1-10%, urea from 0.05 to 5% and water from 30 - 84%, to be applied on burned skin and surrounding area, to treat an or impede progression and or impede development of burns.

[00015] In another embodiment, the invention provides a composition comprising ethanol from 15-70% w/w, cellulose derivative (ethyl, methyl, hydroxymethyl, hydroxyethyl, hydroxypropyl or mixtures of) polymer from 0.05%-20%, and water from 30 -84%, to be applied on burned skin and surrounding area, to treat an or impede progression and or impede development of burns.

[00016] In another embodiment, the invention provides a composition comprising ethanol from 15-70% w/w, cellulose derivative (ethyl, methyl, hydroxymethyl, hydroxyethyl, hydroxypropyl, mixtures of) polymer from 0.05%-20%, a hydroxide from 0.1-10%, and water from 30 -84%, to be applied

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on burned skin and surrounding area, to treat an or impede progression and or impede development of burns.

[00017] In another embodiment, the invention provides a composition comprising ethanol from 15-70% w/w, cellulose derivative (ethyl, methyl, hydroxymethyl, hydroxyethyl, hydroxypropyl, mixtures of) polymer from 0.05%-20%, an alkaline agent from 0.1-10%, and water from 30 -84%, to be applied on burned, inflicted skin and surrounding area, to treat an or impede progression and or impede development of burns.

[00018] In another embodiment, the invention provides a method for treating and/or impeding progression and or impeding development of burns comprising the step of adding to the burned, inflicted area a composition comprising ethyl or isopropyl alcohol in a concentration of 15-70%w/w.

[00019] In another embodiment, the invention provides a method for treating and/or impeding progression and or impeding development of burns comprising the step of adding to the burned, inflicted area a composition comprising ethyl or isopropyl alcohol in a concentration of 15-70%w/w being a vehicle for compounds for burn treatments.

[00020] In another embodiment, the invention provides a method for treating and/or impeding progression and or impeding development of burns comprising the step of adding a composition to the burned, inflicted area comprising ammonium hydroxide.

[00021] In another embodiment, the invention provides a method for treating and/or impede progression and or impede development of burns comprising the step of adding to the burned area a composition comprising ammonium hydroxide and ethyl and/or isopropyl alcohol wherein the ethyl and/or isopropyl alcohol is in a concentration of 20-60%w/w.

[00022] In one embodiment, the invention provides a composition for treating burned skin /membrane/organ comprising ethyl or isopropyl alcohol in a concentration of 20-60%w/w.

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[00023] In another embodiment, the invention provides a composition for treating burned, inflicted skin /membrane/organ comprising ammonium hydroxide.

[00024] In another embodiment, the invention provides a delivery system and use thereof for treating burned skin /membrane/organ comprising a polymer matrix and ammonium hydroxide and ethyl or isopropyl alcohol, wherein the ethyl or isopropyl is in a concentration of 15-70%w/w.

[00025] In another embodiment, the invention provides a composition comprising ethanol from 20-70% w/w, polyacrylate polymer from 0.05%-5%, ammonium hydroxide from 0.1-10%, water from 30 -80% to be applied on burned skin and surrounding area, to treat an or impede progression and or impede development of burns.

[00026] In another embodiment, the invention provides a composition comprising ethanol from 25-60% w/w, polyacrylate polymer from 0.05%-5%w/w triethanolamine from 0.1-6%, water from 30-74%, to be applied on burned skin and surrounding area, to treat an or impede progression and or impede development of burns.

[00027] In another embodiment, the invention provides a composition comprising ethanol from 15-70% w/w, polyacrylate polymer from 0.05%-5%, ammonium hydroxide from 0.1-10%, urea from 0.05 to 5% and water from 30 - 84%, to be applied on burned skin and surrounding area, to treat an or impede progression and or impede development of burns.

[00028] In another embodiment, the invention provides a method for treating and/or impeding progression and or impeding development of burns comprising the step of adding to the burned area a composition comprising ethyl or isopropyl alcohol in a concentration of 15-70% w/w.

[00029] In another embodiment, the invention provides a method for treating and/or impedes progression and or impedes development of burns comprising

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the step of adding a composition to the burned area comprising ammonium hydroxide.

[00030] In another embodiment, the invention provides a method for treating and/or impede progression and or impede development of burns comprising the step of adding to the burned area a composition comprising ammonium hydroxide and ethyl and/or isopropyl alcohol wherein the ethyl and/or isopropyl is in a concentration of 20-70%W/W.

[00031] In another embodiment, the invention provides a method for treating and/or impeding progression and or impeding development of burns comprising the step of adding to the burned area a delivery system comprising polymer matrix and ethyl or isopropyl alcohol in a concentration of 20-70% w/w.

[00032] In another embodiment, the invention provides a method for treating and/or impedes progression and or impedes development of burns comprising the step of adding a delivery system comprising polymer matrix and ammonium hydroxide.

[00033] In another embodiment, the invention provides a method for treating and/or impede progression and/or impede development of burns comprising the step of adding to the burned area a delivery system comprising a polymer matrix ammonium hydroxide and ethyl and/or isopropyl alcohol wherein the ethyl and/or isopropyl is in a concentration of 20-70%w/w.

[00034] In another embodiment, the invention provides a method for treating and/or impede progression and/or impede development of burns comprising the step of adding to the burned area a composition comprising ethanol from 10-70% w/w, polyacrylate polymer from 0.05%-5%, ammonium hydroxide from 0.1-10%, water from 30 -84% to be applied on burned skin and surrounding area, to treat an or impede progression and or impede development of burns.

[00035] In another embodiment, the invention provides a method for treating and/or impede progression and/or impede development of burns comprising the step of adding to the burned area a composition comprising ethanol from 25-

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70% w/w, polyacrylate polymer from 0.05%-5%w/w triethanolamine from 0.1-6%, water from 30-84%, to be applied on burned skin and surrounding area, to treat an or impede progression and or impede development of burns.

[00036] In another embodiment, the invention provides a method for treating and/or impede progression and or impede development of burns comprising the step of adding to the burned area a composition comprising ethanol from 15-70% w/w, polyacrylate polymer from 0.05%-5%, ammonium hydroxide from 0.1-10%, urea from 0.05 to 5% and water from 30 -84%, to be applied on burned skin and surrounding area, to treat an or impede progression and or impede development of burns.

[00037] In another embodiment of the invention, there is provided a method for inhibiting the rejection of skin implants in a subject in need comprising the step of contact the inflicted area and/or the implant with an effective amount of the composition of the invention.

[00038] In another embodiment, the invention provides a method for inhibiting the rejection of skin implants in a subject in need comprising the step of contact the inflicted area and/or the implant with an effective amount of a composition comprising ethyl and/or isopropyl alcohol, wherein the ethyl and/or isopropyl alcohol is in a concentration of 15-70%.

[00039] In another embodiment, the invention provides a method for inhibiting the rejection of skin implants in a subject in need comprising the step of contact the inflicted area and/or the implant with an effective amount of a composition comprising ammonium hydroxide.

[00040] In another embodiment, the invention provides a method for inhibiting the rejection of skin implants in a subject in need comprising the step of contact the inflicted area and/or the implant with an effective amount of a composition comprising ammonium hydroxide and ethyl or isopropyl alcohol, wherein the ethyl and/or isopropyl alcohol is in a concentration of 15-70%.

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[00041] In another embodiment, the invention provides a method for reducing the level of a cytokine, interleukin, tumor necrosis factor, IL1 or IL6 in an inflicted skin area comprising the step of contact the inflicted or preinflicted area with an effective amount of a composition comprising ethyl and/or isopropyl alcohol, wherein the ethyl and/or isopropyl alcohol is in a concentration of 15-70%.

[00042] In another embodiment, the invention provides a method for reducing the level of a cytokine, interleukin, tumor necrosis factor, IL1 or IL6 in an inflicted skin area comprising the step of contact the inflicted or preinflicted area with an effective amount of a composition comprising ammonium hydroxide.

[00043] In another embodiment, the invention provides a method for reducing the level of a cytokine, interleukin, tumor necrosis factor, IL1 or IL6 in an inflicted skin area comprising the step of contact the inflicted or preinflicted area with an effective amount of a composition comprising ammonium hydroxide and ethyl or isopropyl alcohol, wherein the ethyl and/or isopropyl alcohol is in a concentration of 15-70%.

Detailed Embodiments of the Invention

[00044] The invention is based on the surprising discovery that compositions as well as delivery systems comprising volatile short chain alcohols such as ethyl or isopropyl alcohol in a concentration of 15-70% w/w alone, or in combination with ammonium hydroxide, applied on burns, skin, surrounding skin, membrane, organ, before or after burn stimulus could impede wound development.

[00045] In one embodiment of the invention there is provided a composition for treating burned skin /membrane/organ comprising ethyl or/and isopropyl alcohol in a concentration of 20-70%w/w.

[00046] In another embodiment, the invention provides a composition for treating burned skin /membrane/organ comprising ammonium hydroxide.

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[00047] In another embodiment of the invention the ammonium hydroxide is in concentrations from 0.01% to 10% w/w.

[00048] In another embodiment, the invention is directed to a composition for treating burned skin /membrane/organ comprising ammonium hydroxide and ethyl and/or isopropyl alcohol wherein the ethyl and/or isopropyl alcohol is in a concentration of 20-70%.

[00049] In one embodiment, the composition may comprise ammonium hydroxide is in concentrations from 0.01% to 10% w/w.

[00050] In another embodiment, the composition may comprise ammonium hydroxide is in concentrations from 0.01% to 0.1% w/w.

[00051] In another embodiment, the composition may comprise ammonium hydroxide is in concentrations from 0.01% to 0.5% w/w.

[00052] In another embodiment, the composition may comprise ammonium hydroxide is in concentrations from 0.01% to 1% w/w.

[00053] In another embodiment, the composition may comprise ammonium hydroxide is in concentrations from 0.01% to 0.5% w/w.

[00054] In another embodiment, the composition may comprise ammonium hydroxide is in concentrations from 0.01% to 1% w/w.

[00055] In another embodiment, the composition may comprise ammonium hydroxide is in concentrations from 1% to 5% w/w.

[00056] In another embodiment, the composition may comprise ammonium hydroxide is in concentrations from 5% to 10% w/w.

[00057] In an embodiment of the invention the composition may comprise ethyl alcohol or/ and isopropyl alcohol at concentrations of 20-40%w/w.

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[00058] In an embodiment of the invention the composition may comprise ethyl alcohol or/ and isopropyl alcohol at concentrations of 40-70%w/w.

[00059] In another embodiment the concentration of ethyl and/or isopropyl is about 30%.

[00060] In another embodiment the concentration of ethyl and/or isopropyl is about 25%.

[00061] In another embodiment the concentration of ethyl and/or isopropyl is about 20%.

[00062] In another embodiment the concentration of ethyl and/or isopropyl is about 35%.

[00063] In another embodiment the concentration of ethyl and/or isopropyl is about 40%.

[00064] In another embodiment the concentration of ethyl and/or isopropyl is about 45%.

[00065] In another embodiment the concentration of ethyl and/or isopropyl is about 50%.

[00066] In another embodiment the composition of the invention further comprises urea in concentrations from 0.05% to 5% w/w.

[00067] In another embodiment the composition of the invention further comprises urea in concentrations from 0.05% to 10% w/w.

[00068] In another embodiment the composition of the invention further comprises ethanolamine in concentrations from 0.01% to 5% w/w. The ethanol amine may be, for example without limitation, triethanolamine.

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[00069] In another embodiment of the invention there is provided a delivery system for treating burned skin /membrane/ mucosa, organ comprising a polymer matrix and ethyl or/and isopropyl alcohol in a concentration of 20-70%.

[00070] In another embodiment, the invention provides a delivery system for treating burned skin /membrane/organ comprising ammonium hydroxide and a polymer matrix.

[00071] In another embodiment of the invention the ammonium hydroxide is in concentrations from 0.01% to 10% w/w.

[00072] The delivery system may comprise ammonium hydroxide is in concentrations from 0.01% to 0.1% w/w.

[00073] The delivery system may comprise ammonium hydroxide is in concentrations from 0.01% to 0.5% w/w.

[00074] The delivery system may comprise ammonium hydroxide is in concentrations from 0.01% to 1% w/w.

[00075] The delivery system may comprise ammonium hydroxide is in concentrations from 0.01% to 0.5% w/w.

[00076] The delivery system may comprise ammonium hydroxide is in concentrations from 0.01% to 1% w/w.

[00077] The delivery system may comprise ammonium hydroxide is in concentrations from 1%-5% w/w.

[00078] The delivery system may comprise ammonium hydroxide is in concentrations from 5%-10% w/w.

[00079] In another embodiment, the invention provides an aqueous delivery system for treating burned skin /membrane/organ comprising ammonium carbonate and a polymer matrix.

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[00080] In another embodiment, the invention provides an aqueous delivery system for treating burned skin /membrane/organ comprising ammonium carbonate.

[00081] In another embodiment of the invention, the concentration of the ammonium carbonate in the delivery system is from 0.01% to 10% w/w.

[00082] In another embodiment of the invention, the delivery system may comprise ammonium hydroxide is in concentrations from 0.01% to 1% w/w.

[00083] In another embodiment of the invention, the delivery system may comprise ammonium hydroxide is in concentrations from 0.01% to 0.1% w/w.

[00084] In another embodiment of the invention, the delivery system may comprise ammonium hydroxide is in concentrations from 0.01% to 0.5% w/w.

[00085] In another embodiment of the invention, the delivery system may comprise ammonium hydroxide is in concentrations from 0.01% to 1% w/w

[00086] In another embodiment of the invention, the delivery system may comprise ammonium hydroxide is in concentrations from 0.01% to 0.5% w/w.

[00087] In another embodiment of the invention, the delivery system may comprise ammonium hydroxide is in concentrations from 0.01% to 1% w/w.

[00088] In another embodiment of the invention, the delivery system may comprise ammonium hydroxide is in concentrations from 1%-5% w/w.

[00089] In another embodiment of the invention, the delivery system may comprise ammonium hydroxide is in concentrations from 5%-10% w/w.

[00090] In another embodiment, the invention is directed to a delivery system for treating burned skin /membrane/organ comprising ammonium

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hydroxide and ethyl and/or isopropyl alcohol, wherein the ethyl and/or isopropyl is in a concentration of 20-60% w/w.

[00091] In another embodiment the concentration of the ethyl and/or isopropyl is from 30-50%.

[00092] In another embodiment the concentration of ethyl and/or isopropyl is about 30%.

[00093] In another embodiment the concentration of ethyl and/or isopropyl is about 25%.

[00094] In another embodiment the concentration of ethyl and/or isopropyl is about 20%.

[00095] In another embodiment the concentration of ethyl and/or isopropyl is about 35%.

[00096] In another embodiment the concentration of ethyl and/or isopropyl is about 40%.

[00097] In another embodiment the concentration of ethyl and/or isopropyl is about 45%.

[00098] In another embodiment the concentration of ethyl and/or isopropyl is about 50%.

[00099] In another embodiment, the ethyl alcohol and/or isopropyl alcohol may be slowly released from the delivery system or the composition.

[000100] In another embodiment, each of the composition of the invention may comprise an alkalizing agent.

[000101] In another embodiment, the ammonium hydroxide may be slowly released from the delivery system or the composition.

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[000102] The polymer of the invention is selected from methylcelluose, ethylcellulose, polyacrylate, acrylates, carbomers, chitin, guar, chitozan, PVP, PVA, gums, sylastic, hydroxypropylcellulose and other cellulose derivatives, Eudragits and such, pectines, hyaluronic acid, hyaluronates, gelatin and derivatives, agar, adhesives or mixture thereof.

[000103] In another embodiment, the composition or the delivery system further comprising plant extracts/tinctures/oils/macerates such is arnica, plantago, equisetum, lavender, joubarbe, hamamelis, urtica, calendula, daucus, symphytum, sanguisorba, symphytum, aloe vera, roman chamomile, tea tree, witch hazel, mameluca.

[000104] The composition or the delivery system of the invention may be in a form of gel, cream, emulsion, lotion, suspension, liposomes, ethosomes, microcapsules, microspheres, bandage, perforated bandage, burn dressing, patch, spray, bath, brushing, douches, aerosols, jet aerosols, foams, used as such or by means of devices.

[000105] It is therefore an object of the present invention to provide a method of avoiding or minimizing burn damage to the skin.

[000106] In one embodiment, the treatment is a one stage treatment by compositions/devices that stop burn progression and facilitate healing (re-epithelization, re-vascularisation, etc.

[000107] In another embodiment, the treatment may comprise two stage treatment: Stage I- treatment for impeding/ stopping wound formation/ burn progression/burn development; Stage II– treatment for healing- re-epithelization.

[000108] In another embodiment, the invention provides delivery systems that could impede wound development, which comprise short chain volatile alcohols such as ethanol and isopropyl alcohol with or without additional agents, applied on burned skin, surrounding skin, membrane or organ, before or after burn stimulus.

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[000109] The composition or the delivery system may further include other agents, such as for example without limitation, a antibiotic, a plant extract, a local anesthetic.

[000110] The composition can also contain antimicrobials, including antibiotics, sulpha derivatives, silver sulphadiazine and mafenide, antifungals, iodine anti-viral compounds and other which may complement or supplement the activity of the basic composition. Suitable antibiotics include tetracycline, polymyxin, erythromycin, bacitracin, gentamycin, vincomycin, or other antibiotics used in or systemic administration, including over-the-counter formulations. Examples of useful antifungals include tolnaftate , nystatin, micatin.

[000111] Examples of antivirals include interferon, either natural or recombinant, as well as nucleoside analogs, e.g., acyclovir. Counter-irritants such as camphor and menthol, drying agents such as benzyl alcohol, resorcinol and phenol, and astringents such as zinc sulfate and tannic acid can also be added to the composition as can other types of agents such as sunscreens, emollients, preservatives, fragrances, antioxidants, color additives, lubricants, moisturizers or drying agents. For example, a sunscreen, e.g., PABA, can be added to the formula since it is known that burns can be caused by ultraviolet radiation.

[000112] Examples of antibiotics include: chloramphenicol, chlortetracycline, clyndamycin, clioquinol, erythromycin, framycetin, gramicidin, fusidic acid, gentamicin, mafenide, mupiroicin, neomycin, polymyxin B, bacitracin, silver sulfadiazine, tetracycline and chlortetracycline, steroidal antibiotics, peptide antibiotics. Those of ordinary skill in the art will appreciate that there are other appropriate antibiotics such as those listed in the pharmaceutical formularies or new antibiotic molecules.

[000113] In another embodiment, the composition or the delivery system may include Tea Tree Blend. Tea Tree Blend is a mixture of terpenes and terpinols that are generally naturally occurring, but can be synthetically prepared. The

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terpene and terpinol compounds can be obtained either as pure compounds derived from the natural oils or as mixtures of components derived from plants of Melaleuca alternifolia, Melaleuca linearifolia, Melaleuca leucadendron, Eucalyptus longirostris and closely related species.

[000114] In another embodiment, a local anesthetic may be added. The anesthetic is preferably selected from the group consisting of esters, amides, ethers, and combinations thereof and, in particular, anesthetics and other anesthetics which may be formulated in accordance with the preferred embodiments of the present invention and applied, including procaine, chloroprocaine, tetracaine, propoxycaine, benzocaine, cocaine, proparacaine, bupivacaine, dibucaine, etidocaine, lidocaine, mepivacaine, prilocaine, dyclonine, promazine and combinations thereof.

[000115] Antiinflammatory actives useful in accordance with the present invention include steroidal actives such as hydrocortisone as well as non-steroidal actives including propionic derivatives; acetic acid derivatives; biphenylcarboxylic acid derivatives; fenamic acid derivatives; and oxicams. Examples of antiinflammatory actives include without limitation acetominaphen, diclofenac, ibuprofen, acetaminophen, indomethacin, oxaprozin, pranoprofen, benoxaprofen, bucloxic acid, elocon; and mixtures thereof.

[000116] Vitamin actives which may be used in accordance with the present invention include vitamin A and derivatives, including retinoic acid, retinyl aldehyde, retin A, retinyl palmitate, adapalene, and beta-carotene; vitamin B (panthenol, provitamin B5, panthenic acid, vitamin B complex factor); vitamin C (ascorbic acid and salts thereof) and derivatives such as ascorbyl palmitate; vitamin D including calcipotriene (a vitamin D3 analog) vitamin E including its individual constituents alpha-, beta-, gamma-, delta-tocopherol and cotrienols and mixtures thereof and vitamin E derivatives including vitamin E palmitate, vitamin E linolate and vitamin E acetate; vitamin K and derivatives; vitamin Q (ubiquinone) and mixtures thereof

[000117] The composition may also contain one or more additional agents, including, buffering agents, surfactants, antioxidants, permeation enhancing

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agents, preservatives, parabens, coloring agents, fragrances, lubricants, moisturizers, sunscreens, drying agents and the like and, more specifically, may include ingredients such as stearic acid, borax, eucalyptus oil, beeswax..

[000118] The surfactant may be selected from the group consisting of anionic, nonionic, and cationic surfactants and combinations thereof. Suitable ionic surfactants include anionic surfactants such as monovalent salts, e.g., sodium and potassium salts of alkyl, aryl and alkyl-aryl sulfates and sulfonates, particularly those with from about 8 to 22 carbon atoms, and cationic surfactants, such as quaternary ammonium salts. Suitable non-ionic surfactants include polyethylene oxide adducts of fatty alcohols, e.g., alkylated polyoxyethylenes, alkylated polyoxyethylene-polyoxypropylene copolymers, and the surfactant nonoxynol, lauramide DEA.

[000119] In addition, cationic surfactants may be used, alone. An example is trimethyldodecylammonium chloride, a positively charged quaternary ammonium complex that has antimicrobial characteristics. Other quaternary salts, with and without long chain moieties to provide surface activity.

[000120] Nonionic surfactants such as polysorbates, nonoxynol, polyoxyethylene alkyl ethers, polyoxyethylene alkyl ethers, sorbitan esters. Other common nonionic surfactants include polyoxyethylenes amines and polyoxyethylenes amides, polyoxyethylene-polyoxypropylene copolymers, alkyl sorbitols.

[000121] The composition of the invention can be prepared in almost any relatively inert carrier. Generally, the formulation could take several forms, e.g., cream, gel, spray, ointment, "Chapstick" and solution forms. Each of these formulations may contain the two active ingredients as well as microorganism growth inhibitors (preservatives). Many such carriers are routinely used and can be obtained by reference to pharmaceutical texts. Examples include polyethylene glycols (PEG), polypropylene copolymers (Pluronics), and some water soluble gels.

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[000122] Thickeners could include natural and synthetic types. The thickeners used can include but are not limited to xanthan, karaya, guar gum, clay tragacanth various polyssacharide materials such as starches. The thickeners can be present in an amount of about 0 parts to about 5 parts.

[000123] Preservative or preservatives are selected from the group consisting of phenoxyethanol, methylparaben, propylparaben, benzyl alcohol, benzoic acid, sodium benzoate, potassium benzoate, sorbic acid, sodium sorbate, potassium sorbate and phenylethyl alcohol.

[000124] Another ingredient, which may be formulated with the compositions of the present invention, is a moisturizer. As used herein a "moisturizer" is an ingredient, which promotes the retention of water to the surface area of the human body skin. The term moisturizer as used herein includes both components that deliver water to the skin, also commonly referred to in the art as "humectant". Moisturizers that may used in accordance with the present invention include without limitation polyhydroxy alcohols, including glycerol, butylene glycol, hexylene glycol, propylene glycol, tetraglycol, sorbitol and the like; lactic acid and lactate salts, such as sodium or ammonium salts; C.sub.3 and C.sub.6 diols and triols including hexylene glycol, 1,4 dihydroxyhexane, 1,2,6-hexane triol; aloe vera in any of its forms, for example aloe vera gel; sugars and starches; sugar and starch derivatives, for example alkoxylated glucose; hyaluronic acid; lactamide monoethanolamine; acetamide monoethanolamine; glycolic acid; alpha and beta hydroxy acids (e.g. lactic, glycolic salicylic acid); glycerin; panthenol; urea; vaselin; natural oils; oils and waxes (see: the emollients section herein) and mixtures thereof.

[000125] A further ingredient, which may be formulated with the compositions of the present invention, is an emollient. Emollients are used to add or replace lipids and natural oils to the surface area of the human body. The term emollient as used herein is intended to include conventional lipids (for example, oils, waxes, lipids and other water insoluble components) and polar lipids (lipids which have been modified in order to increase water solubility typically through esterfication of a lipid to a hydrophilic moiety for example hydroxy groups, carbonyl groups and the like). Emollients which may be used in

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the present invention may be selected from the group consisting of natural oils and plant-derived and essential oils, esters, silicone oils, polyunsaturated fatty acids, lanoline and its derivatives and petrochemicals.

[000126] Natural oils which may be used in accordance with the present invention may be obtained from sesame; soybean; apricot kernel; palm; peanut; safflower; coconut; olive; cocoa butter; palm kernel; shea butter; sunflower; almond; avocado; borage; carnauba; hazel nut; castor; cotton seed; evening primrose; orange roughly; rapeseed; rice bran; walnut; wheat germ; peach kernel; babassu; mango seed; black current seed; jojoba; macadamia nut; sea buckthorn; sasquana; tsubaki; mallow; meadow foam seed; coffee; emu; mink; grape seed; thistle; tea tree; pumpkin seed; kukui nut; and mixtures thereof.

[000127] Esters, which may be used. Examples of these materials include isopropyl palmitate; isopropyl myristate; isopropyl isononate; C12 /C14 benzoate ester (also known as Finesolve); sorbitan palmitate, sorbitan oleate; sucrose palmitate; sucrose oleate; isostearyl lactate; sorbitan laurate; lauryl pyrrolidone carboxylic acid; panthenyl triacetate; and mixtures thereof.

[000128] Further useful emollients include silicone oils, including non-volatile and volatile silicones. Examples of silicone oils that may be used in the compositions of the present invention are dimethicone; cyclomethycone; dimethycone-copolyol; aminofunctional silicones; phenyl modified silicones; alkdyl modified silicones; dimethyl and diethyl polysiloxane; mixed C1 -C30 alkyl polysiloxane; and mixtures thereof. A yet further useful group of emollients, which may be formulated in accordance with the present invention, are lanolin and lanolin derivatives for example lanolin esters.

[000129] It is noted that although the ingredients mentioned herein are generally defined as emollients they may also possess other properties such as moisturization or other conditioning properties (see under: Moisturizers, hereinbefore mentioned).

[000130] In an embodiment of the invention the composition may comprise ethanol from 20-60% w/w, polyacrylate polymer from 0.05%-5%, ammonium

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hydroxide from 0.1-10%, water from 30 -79% to be applied on burned skin and surrounding area, to treat/impede progression/ impede development of burns (produced by heat, cold, light, u v rays, x rays, Laser, Infrared Rays, liquid nitrogen).

[000131] In another embodiment of the invention, the composition may comprise ethanol from 25-60% w/w, polyacrylate polymer from 0.05%-5%w/w triethanolamine from 0.1-6%, water from 30-75%, to treat/impede progression/ impede development of burns (produced by heat, cold, light, UV rays, X-Rays, Laser, Infrared Rays, friction, abrasion, liquid nitrogen).

[000132] In another embodiment the composition may comprise ethanol from 15-60% w/w, polyacrylate polymer from 0.05%-5%, ammonium hydroxide from 0.1-10%, urea from 0.05 to 5% and water from 30 -84%, to treat/impede progression/ impede development of burns (produced by heat, cold, light, UV rays, X-Rays, Laser, Infrared Rays, liquid nitrogen).

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[000133] It is therefore an object of the present invention to provide a method of avoiding or minimizing burn damage to the skin by applying to the burned area the composition of the invention, as described hereinabove. Accordingly, the invention provides use of the composition described hereinabove for treating and/or impedes progression and/or impedes development of burns.

[000134] In another embodiment, the invention provides a method for treating and/or impede progression and/or impede development of burns comprising the step of adding to the burned area a composition comprising ethyl or isopropyl alcohol in a concentration of 20-60% w/w.

[000135] In another embodiment, the invention provides a method for treating and/or impedes progression and/or impedes development of burns comprising the step of adding a composition to the burned area comprising ammonium hydroxide.

[000136] In another embodiment, the invention provides a method for treating and/or impede progression and/or impede development of burns comprising the

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step of adding to the burned area a composition comprising ammonium hydroxide and ethyl and/or isopropyl alcohol wherein the ethyl and/or isopropyl is in a concentration of 20-60% w/w.

[000137] In another embodiment, the invention provides a method for treating and/or impede progression and/or impede development of burns comprising the step of adding to the burned area a delivery system comprising polymer matrix and ethyl or isopropyl alcohol in a concentration of 20-60%w/w.

[000138] In another embodiment, the invention provides a method for treating and/or impedes progression and/or impedes development of burns comprising the step of adding a delivery system comprising polymer matrix and ammonium hydroxide.

[000139] In another embodiment, the invention provides a method for treating and/or impede progression and/or impede development of burns comprising the step of adding to the burned area a delivery system comprising a polymer matrix ammonium hydroxide and ethyl and/or isopropyl alcohol wherein the ethyl and/or isopropyl is in a concentration of 20-60%w/w.

[000140] In another embodiment, the invention provides a method for treating and/or impede progression and/or impede development of burns comprising the step of adding to the burned area a composition comprising ethanol from 20-60% w/w, polyacrylate polymer from 0.05%-5%, ammonium hydroxide from 0.1-10%, water from 30 -80% to be applied on burned skin and surrounding area, to treat an or impede progression and or impede development of burns.

[000141] In another embodiment, the invention provides a method for treating and/or impede progression and or impede development of burns comprising the step of adding to the burned area a composition comprising ethanol from 25-60% w/w, polyacrylate polymer from 0.05%-5%w/w triethanolamine from 0.1-6%, water from 30-74%, to be applied on burned skin and surrounding area, to treat an or impede progression and or impede development of burns.

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[000142] In another embodiment, the invention provides a method for treating and/or impeding progression and/or impeding development of burns comprising the step of adding to the burned area a composition comprising ethanol from 15-60% w/w, polyacrylate polymer from 0.05%-5%, ammonium hydroxide from 0.1-10%, urea from 0.05 to 5% and water from 30 -84%, to be applied on burned skin and surrounding area, to treat an or impede progression and or impede development of burns.

[000143] In another embodiment of the invention, there is provided a method for inhibiting the rejection of skin implants in a subject in need, comprising the step of contact the inflicted area , the surrounding area and/or the implant with an effective amount of the composition of the invention.

[000144] In another embodiment of the invention, there is provided a method for interfering at the infliction site with production of cytokines, interleukins, tumor necrosis factors, IL1, IL6, TNF, comprising the step of contact of the inflicted area, the surrounding area and/or the implant with an effective amount of the composition of the invention.

[000145] In another embodiment of the invention, the composition and the delivery system described above are refrigerated before or during use.

Examples

Example 1

Composition 1: a carbomer gelled matrix containing ethanol 35% w/w.

Composition 1 was applied to a second degree burn (as a result of short contact with 175^0C hot oven) on the skin of left hand of a 30 years aged female and remained for about one hour. This treatment completely impeded the development of the burn.

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Example 2- composition to stop burn wound progress

	% w/w
Ethanolic plant extracts	10
Ammonium hydroxide 10% solution	2
Ethyl alcohol	22
Carbomer	1
DDW	65

Example 3- composition to stop burn wound progress

		% w/w
Ammonium hydroxide 10% solution		3
Alcoholic Aloe Vera Gel		57
Carbopol 934		1
Purified water	to	100%
Total ethanol		20%

Example 4- composition to stop burn wound progress

	% w/w
Passiflora extract	5
Ammonium hydroxide soln	3
Urea	1
Ethanol	35
Polyacrylate	1
Glycerol	7
DDW	48

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Example 5- composition to stop burn wound progress

	% w/w
Ethyl alcohol	30%
Carbomer	2%
Ammonium hydroxide 10% sol	4%
Distilled water to	100

Example 6- composition to stop burn wound progress

Ethanolic plant extracts in
Alcohol containing Gel base
Where the concentration of ethanol is 60% w/w

Example 7- composition to stop burn wound progress

	% w/w
Ethanol.	22%
Carbomer	2.2%
Ammonium hydroxide 10% solution	4%
DDW	71.8%

The preparation was applied and remained on the injury for 20 minutes, on a very thick layer, on the a surface of about 5 centimeters square of the arm of a man aged 35, injured by boiling water. The pain was completely relived after application of the composition in example 7. No vesicles or wound developed after this treatment.

Example 8- composition to stop burn wound progress

	% w/w
Ethanol	30%
Carbopol	2%
Ammonium hydroxide 10% solution	4%
Plant extracts	7%
Plant tinctures	1%
Purified water	68%

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Example 9- composition to stop burn wound progress

	% w/w
Ethanol	20%
Carbopol	2.5%
Ammonium hydroxide 10% solution	4%
Plant tinctures	5%
Purified water	68.5%

Example 10- composition to stop burn wound progress

	% w/w
Ethanol	45%
Carbopol	2%
Ammonium hydroxide 10% solution	4%
Triethanolamine	1%
Plant tinctures	5%
Purified water	43%

Example 11- composition to stop burn wound progress

	% w/w
Ethanol	20
Carbopol	1.5
Ammonium hydroxide 10% solution	3
DDW	68.5

Example 12

The effects of the treatment on wound histology and burn depth after heat burn

The aim of the experiment was to measure the effect of the treatment on wound histology and burn depth after heat burn:

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Standardized partial thickness burns were inflicted on the back shaved (24 hours before the experiment) of Sprauge Dawly rats by using a copper cylinder, (R=1cm, H= 1cm, W= 100g), heated to 75 °C in a water bath.

The composition of Example 5 was applied, to an area larger than the injury, immediately after the burn or one hour after. Following the treatment, the rats were sacrificed and the wound as well as adjacent normal tissues were sampled, fixed, processed by routine technique and stained with hematoxylin & eosin. The progress of the wound was assessed at various times and compared with untreated control groups. The effect of the treatment on preventing the burn progress was evaluated by measuring the burn depth by using a program for evaluation of the vascular network damage and by histological analysis of skin anatomic elements. The data were analyzed by ANOVA test.

Animal experiments complied with animal care regulations.

Experimental Results

The progress of the burn damage was prevented or reduced significantly in rats treated with the composition described in Example 5 stored previous to the experiment at $+5^0$C.

Figure1 shows histological images of rat skin structures (collagen, epidermis, muscles) after the thermal burn, with (Figure 1B-D) and without (Figure 1A) treatment.

Example 13

Compositions were applied to the burn skin inflicted as previously described (example 11):

The following compositions were used:

-Carbopol delivery systems in a gel form containing ethanol in concentrations from 20 to 63% w/w.

-Spray liquids containing ethanol in concentrations from 20 to 70% w/w in a aqueous medium.

Burn progress assessment:

Burn progress was assessed by measuring the burn depth by using a program – Galay CUE 2 - for evaluation of vascular network damage.

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The histological burn depth was calculated by measuring the level of blocked and patent vessels within the burn specimens. Histological tissue sections were taken from burn area. The depth of the deepest blocked vessel and that of the most superficial undamaged vessel were measured microscopically from the surface of the burn, using Galay CUE2 advanced software. The resulting values were expressed as a percentage of the total skin thickness, the mean of which was considered to be the percentage depth of the burn. These assessments were made at 3, 6 and 24 hours after the burn. These measurements were expressed as a percentage (%) of the total skin thickness.

Figure 2 demonstrates measurement of depth dermal microvascular destruction in the first 24 hours (at 3, 6 and 24 hours) after burn infliction: Animals have been treated immediate after infliction with carbopol gels containing 20, 30, 50 and 63% w/w ethanol and 1 hour after infliction with the gel containing 30% ethanol. The results are compared with untreated inflicted rats. The depth parameter was measured in rats sacrificed 3, 6, and 24 hours after burn infliction. Results in Figure 2 show parameters measured at 3, 6 and 24 hours after skin burn: treatment with carbopol gels containing 20-63% w/w ethanol drastically impeded the micro-vascular destruction and progress of burn as compared to untreated rats inflicted animals immediately. Treatment one hour after infliction with 30%w/w ethanolic gel was also very efficient.

Histological analysis of skin anatomic elements:

After the treatment, the animals were sacrificed and the wound as well as adjacent normal tissues were sampled, fixed, processed by routine techniques and stained with hematoxylin & eosin. The parameters investigated included edema formation, inflammation cells migration and preservation of skin structures (epidermis, basal layer, collagen, muscles and appendages). Every histological parameter has been scored using a scale from 0 to 4. Numbers express the balance between the damaged and preserved parameters. A normal parameter is has a score of "0". With increasing damage, the parameter is represented by higher numbers. Number "4" represents total damage. The sums of all scored parameters express the preservation or destruction of the skin after thermal burn for every treatment. The scored number representing total damage is "28". These assessments were made at 3, 6 and 24 hours after burn infliction.

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Figure 3 shows histological parameters from skin sections 24 hours after burn infliction. The rats were treated immediate after infliction with liquid sprays containing 20, 30, 50 and 70% ethanol.

Figure 4 shows histological parameter from skin sections 24 hours after burn infliction. The rats were treated immediate after infliction with gels containing 20, 30, 50 and 60% w/w ethanol.

Figures 3 and 4 clearly show that treatment with gels and liquid sprays containing 20 to 70% ethanol stopped burn progression- the most effective gel had a parameter value of 5 as compared with 24 for untreated animals in which the burn wound progressed, and 12 for the most effective spray vs. 22 for untreated progressed burns.

In these experiments preparations and delivery systems containing ethanol between 20 to 50% were the most effective in stopping burn progression.

Example 14

In this experiment heat burns were inflicted as previously described in 14 rats .Two rats served as control and the other animals (4 groups of 3 rats each.) were immediately treated as follows:

Control- untreated

Group 1- "Cool gel" composed of polymeric gel in water

Group 2- 15 %w/w ethanol in 2.2 % carbopol gel comprising 2.2% carbopol 934P, 4% ammonium hydroxide 10% solution and water.

Group 3- 30%w/w ethanol in a carbopolic gel composing 2.2% carbopol 934P, 4% ammonium hydroxide 10% solution and water.

Group 4- 60% w/w ethanol in a carbopolic gel composing 2.2% carbopol 934P, 4% ammonium hydroxide 10% solution and water.

Mean value histological parameters assessed

Control- 23

Group 1- 19

Group 2- 17

Group 3- 5

Group 4- 17

The results of this experiment indicate that compositions containing ethanol and ammonium hydroxide were efficient in impeding the burn development as compared to controls- untreated or aqueous gels treated animals.

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Example 15

STOP BURN CREAM:

Vegetable oil	8 %
Lecithin	0.4 %
Tween 20	2.2%
Span 20	1%
Carbopol 980	2%
Ethanol 96	35%
Ammonium hydroxide 10%	2%
Water to	100%

Example 16
STOP BURN CREAM with aromatic oils:

Aromatic oil	5%
Tween 20	4%
Span 20	7%
Carbopol 980	2%
Ethanol 96	35%
Ammonium hydroxide 10%	2%
Water to	100%

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What is claimed is:

1. A method for treating and/or impede progression and/or impede development of burns comprising the step of adding to the burned area a composition comprising ethyl and/or isopropyl alcohol, wherein the ethyl and/or isopropyl alcohol is in a concentration of 15-70%.

2. The method of claim 1, wherein ethyl alcohol or/and isopropyl alcohol at concentrations of 20-40%.

3. The method of claim 1, wherein ethyl alcohol or/ and isopropyl alcohol at concentrations of 40-60%.

4. The method of claim 1, wherein said composition further comprises a polymer.

5. The method of claim 4, wherein said polymer is methylcelluose, ethylcellulose, polyacrylate, acrylate, carbomer, chitin, guar, chitozan PVP, PVA, gum, sylastic, hydroxypropylcellulose, hydroxyethylcellulose, a cellulose derivative, eudragit, pectine, hyaluronic acid, hyaluronate, gelatin, gelatin derivative, agar, adhesive or mixture thereof.

6. The method of claim 4 wherein said polymer is polyacrylate.

7. A method for treating and/or impede progression and/or impede development of burns comprising the step of adding a composition to the burned area comprising ammonium hydroxide.

8. The method of claim 7, wherein the ammonium hydroxide is in concentrations from 0.01% to 10% w/w.

9. The method of claim 7, wherein said composition further comprises a polymer.

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10. The method of claim 7, wherein said polymer is methylcelluose, ethylcellulose, polyacrylate, acrylate, carbomer, chitin, guar, chitozan PVP, PVA, gum, sylastic, hydroxypropylcellulose, hydroxyethylcellulose, a cellulose derivative, eudragit, pectine, hyaluronic acid, hyaluronate, gelatin, gelatin derivative, agar, adhesive or mixture thereof.

11. A method for treating and/or impede progression and/or impede development of burns comprising the step of adding to the burned area a composition comprising ammonium hydroxide and ethyl or isopropyl alcohol, wherein the ethyl and/or isopropyl alcohol is in a concentration of 15-70%.

12. The method of claim 11, wherein the ammonium hydroxide is in concentrations from 0.01% to 10% w/w.

13. The method of claim 11, wherein ethyl alcohol or/ and isopropyl alcohol at concentrations of 20-40% w/w.

14. The method of claim 11, wherein ethyl alcohol or/ and isopropyl alcohol at concentrations of 40-60% w/w.

15. The method of claim 11, wherein the composition, further comprising urea in concentrations from 0.05% to 5% w/w.

16. The method of claim 11, further comprising ethanol amine in concentrations from 0.01% to 5% w/w.

17. A method for treating and/or impede progression and/or impede development of burns comprising the step of adding a delivery system comprising a polymer matrix and ammonium hydroxide and ethyl and/or isopropyl alcohol wherein the ethyl and/or isopropyl alcohol is in a concentration of 10-60% w/w.

18. The method of claim 17, wherein the polymer is selected from methylcelluose, ethylcellulose , polyacrylate, acrylates, carbomers, chitin, guar,

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chitozan PVP, PVA, gums, sylastic, hydroxypropylcellulose and other cellulose derivatives, eudragits and such, pectines, hyaluronic acid , hyaluronates, gelatin and derivatives, agar, adhesives or mixture thereof.

19. The method of claim 17, wherein said composition further comprising plant extracts/tinctures/oils/macerates.

20. The method of claim 19, wherein said plant is arnica, plantago, equisetum, lavender, joubarbe, hamamelis, urtica, calendula, daucus, symphytum, sanguisorba, symphytum, aloe vera, roman chamomile, tea tree, witch hazel, mameluca.

21. The method of claim 17, wherein the composition is in a form of gel, cream, emulsion, lotion, suspension, liposomes, ethosomes, microcapsules, microspheres, bandage, perforated bandage, patch, spray, bath, brushing, douches, aerosols, jet aerosols, foams, dressings.

22. The method of claim 17 further comprises a local anesthetic, a antibiotic, a plant extract, a vitamin, a growth factor, a protein or an anti-inflammatory, an antiseptic, an antifungal agent, an anticytokine, an interlukin or re-epithelization factors growth hormone.

23. The method of claim 17 further comprises a local anesthetic, an antibiotic, an amino acid, a histamine, a carnosine, a homocarnosine, a plant extract, a vitamin, a growth factor, a protein, insulin, an enzyme, an anti-inflammatory, an antiseptic, an antifungal agent, an anticytokine, an interlukin, a re-epithelization factor, a growth hormone or mixtures thereof.

24. The method of claim 17, wherein the composition comprises ethanol from 15-70% w/w, polyacrylate polymer from 0.05%-5%, ammonium hydroxide from 0.1-10% and water from 30 -84%.

25. The method of claim 1, wherein the composition comprises ethanol from 25-70% w/w, polyacrylate polymer from 0.05%-5%w/w triethanolamine from 0.1-6% and water from 30-84%.

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26. The method of claim 17, wherein said composition comprises ethanol from 15-70% w/w, polyacrylate polymer from 0.05%-5%, ammonium hydroxide from 0.1-10%, urea from 0.05 to 5% and water from 30 –84%.

27. The method of claim 17, wherein said composition comprises ethanol from 15-70% w/w, polyacrylate polymer from 0.05%-5%, ammonium hydroxide from 0.1-10%, urea from 0.05 to 5% and water from 30 –84%.

28. A method for treating and/or impede progression and/or impede development of burns and comprising the step of adding to the burned, inflicted area a composition comprising ethanol from 15-70% w/w this composition being a vehicle for compounds for burn treatments for enhanced efficiency.

29. A method for treating and/or impede progression and/or impede development of burns and comprising the step of adding to the burned area a composition comprising ethanol from 15-70% w/w, polymer from 0.05%-20%, and water from 30 -84%, to be applied on burned, inflicted skin and surrounding area, to treat an or impede progression and or impede development of burns, this composition being a vehicle for compounds for burn treatments.

30. A method for treating and/or impede progression and/or impede development of burns and comprising the step of adding to the burned area a composition comprising ethanol from 15-70% w/w, polymer from 0.05%-20%, alkaline agent (hydroxides, amines, carbonates) to be applied on burned skin and surrounding area, to treat an or impede progression and or impede development of burn, this composition being a vehicle for compounds for burn treatments.

31. A method for inhibiting the rejection of skin implants in a subject in need comprising the step of contact the inflicted area and/or the implant with an effective amount of a composition comprising ethyl and/or isopropyl alcohol, wherein the ethyl and/or isopropyl alcohol is in a concentration of 15-70%.

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32. A method for inhibiting the rejection of skin implants in a subject in need comprising the step of contact the inflicted area and/or the implant with an effective amount of a composition comprising ammonium hydroxide.

33. A method for inhibiting the rejection of skin implants in a subject in need comprising the step of contact the inflicted area and/or the implant with an effective amount of a composition comprising ammonium hydroxide and ethyl or isopropyl alcohol, wherein the ethyl and/or isopropyl alcohol is in a concentration of 15-70%.

34. A method for reducing the level of a cytokine, interleukin, tumor necrosis factor, IL1 or IL6 in an inflicted skin area comprising the step of contact the inflicted or pre-inflicted area with an effective amount of a composition comprising ethyl and/or isopropyl alcohol, wherein the ethyl and/or isopropyl alcohol is in a concentration of 15-70%.

35. A method for reducing the level of a cytokine, interleukin, tumor necrosis factor, IL1 or IL6 in an inflicted skin area comprising the step of contact the inflicted or pre-inflicted area with an effective amount of a composition comprising ammonium hydroxide.

36. A method for reducing the level of a cytokine, interleukin, tumor necrosis factor, IL1 or IL6 in an inflicted skin area comprising the step of contact the inflicted or pre-inflicted area with an effective amount of a composition comprising ammonium hydroxide and ethyl or isopropyl alcohol, wherein the ethyl and/or isopropyl alcohol is in a concentration of 15-70%.

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DECLARATION AND POWER OF ATTORNEY FOR PATENT APPLICATION

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below under my name.

I believe that I am the original and first sole inventor or an original and first joint inventor of the subject matter which is claimed and for which a patent is sought on the invention entitled:

METHOD AND COMPOSITION FOR BURNED SKIN

the Specification of which

☒ is attached hereto
☐ was filed on
as United States Application Number or PCT International Application No.
and was amended on _____ (if applicable).

I hereby state that I have reviewed and understand the contents of the above-identified Specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, 1.56(a).

I hereby claim foreign priority benefits under Title 35, United States Code, §119 of any provisional application filed in the United States in accordance with 35 U.S.C. §1.119(e), or any application for patent that has been converted to a Provisional Application within one (1) year of its filing date, or any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed.

PRIOR FILED APPLICATION(S)

APPLICATION NUMBER	COUNTRY	(DAY/MONTH/YEAR FILED)	PRIORITY CLAIMED

I hereby claim the benefit under Title 35, United States Code, §120 of any United States application listed below, and, insofar as the subject matter of each of the claims of this application is not disclosed in any prior United States application in the manner provided by the first paragraph of Title 35, United States Code, §112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, §1.56(a), which

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occurred between the filing date of the prior application and the national or PCT international filing date of this application:

APPLICATION NO.	FILING DATE (DAY/MONTH/YEAR)	PENDING, ABANDONED

I hereby appoint as my attorney(s) and agent(s) Mark S. Cohen (Attorney, Registration No. 42,425) or Caleb Pollack (Attorney, Registration No. 37,912) or Guy Yonay (Attorney, Registration No. 52,388) said attorney(s) and agent(s) with full power of substitution and revocation to prosecute this application and transact all business in the Patent and Trademark Office connected therewith.

Please address all correspondence regarding this application to:

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Customer No. 27130

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further, that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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FULL POST OFFICE ADDRESS: **same**

SIGNATURE OF INVENTOR _____

DATE 01 03 04
(day / month / year)

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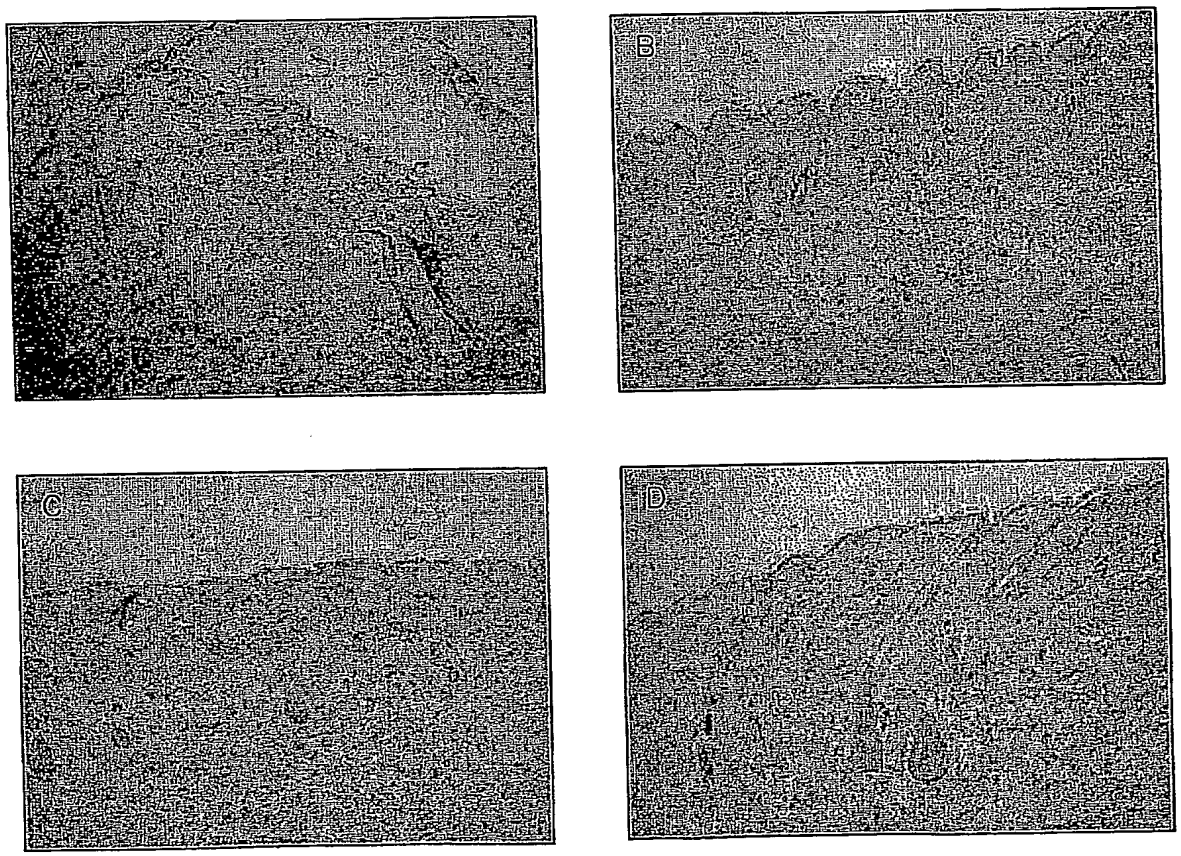

FIG.1

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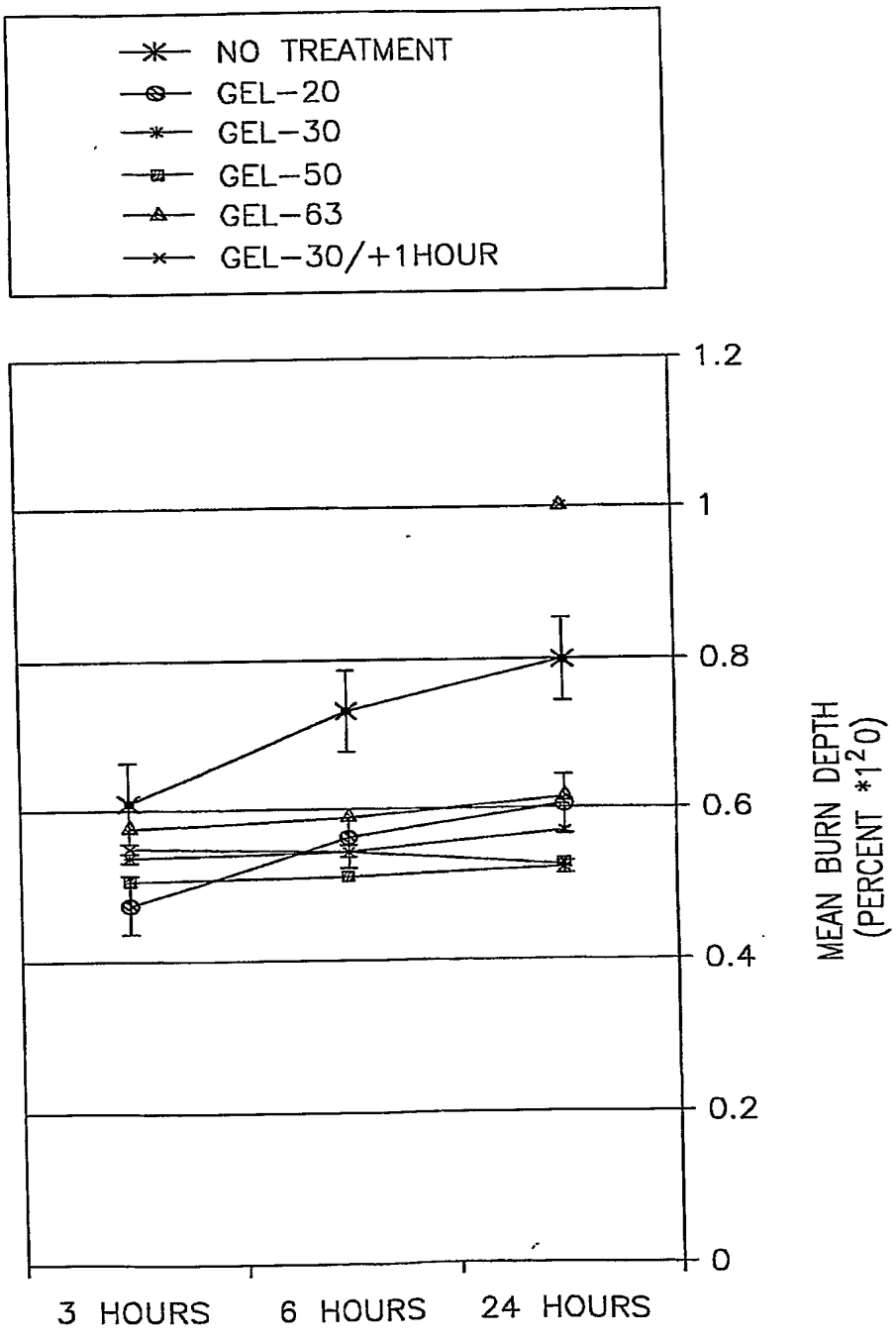

FIG.2

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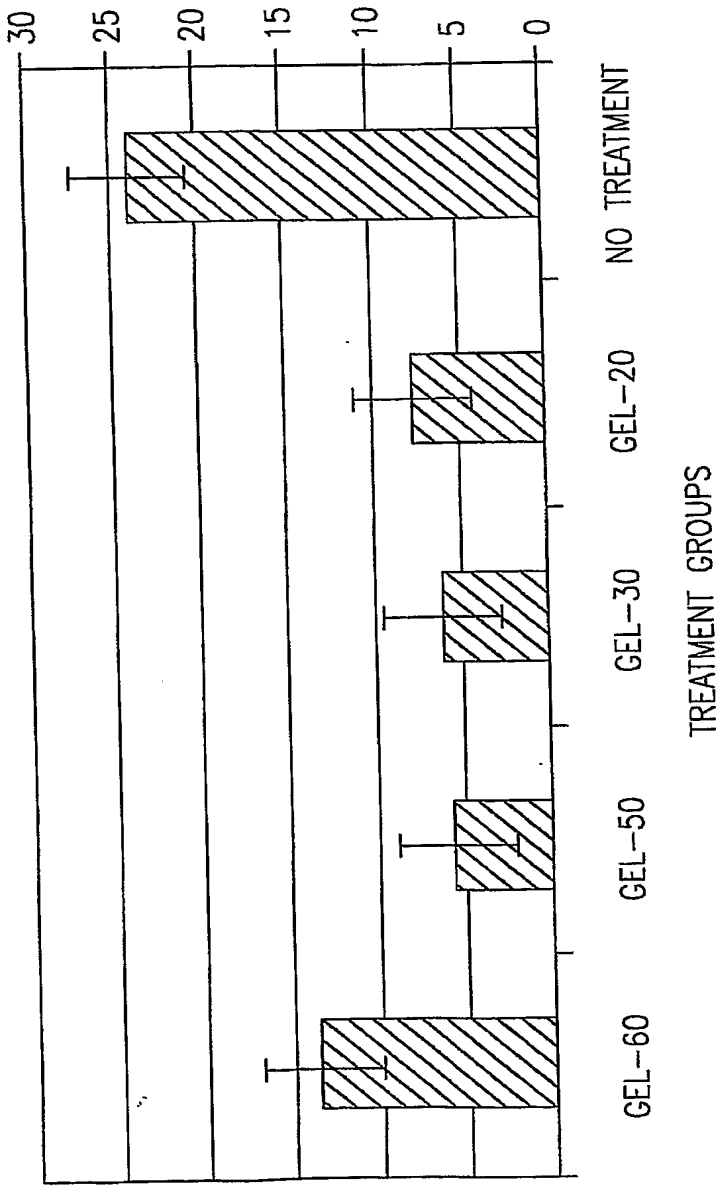

FIG.3

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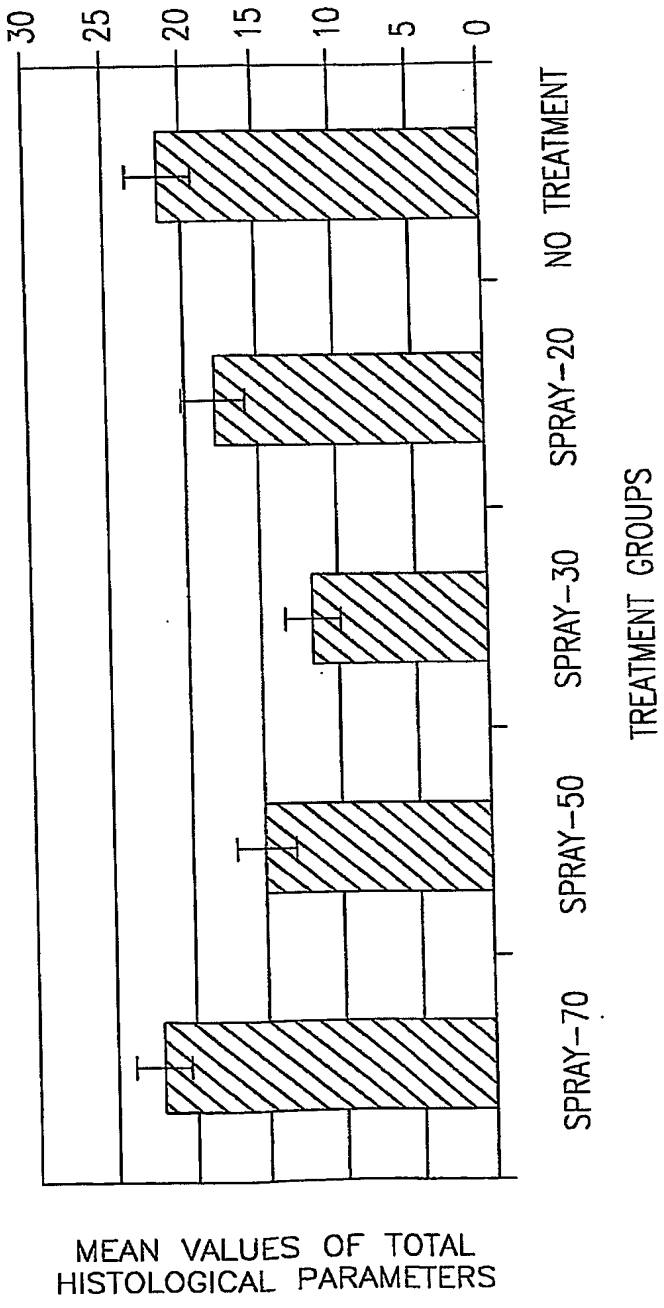

FIG.4

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